

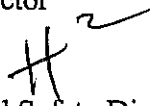


Environment, Health & Safety Division

January 10, 2007

DIR-07-010

To: Eddy Rubin
Genomics Division Director

From: Howard K. Hatayama 
Environment, Health and Safety Division Director

Subject: 2006 Genomics Division Integrated Functional Appraisal

The Environment, Health and Safety Division conducted a triennial Integrated Functional Appraisal (IFA) of the Genomics Division during the period of June through August 2006. The IFA team focused on work that involves higher or special hazards, formal authorizations, and permits.

The Genomics 2006 IFA Report is enclosed. It presents the IFA results and a description of the appraisal process.

In general, the Division's operations that were assessed conform to Integrated Safety Management principals, adhere to the conditions of the applicable authorization or permit, and operate in a safe and compliant manner. Specific areas for improvement include sixteen findings (issues found not to comply with standard or policy) and sixteen observations. Recommendations are provided in each case. IFA findings are to be tracked to completion in the Lab's Corrective Action Tacking System.

Your IFA Team Leader, Bruce King, is available to answer any questions (x2768).

cc: Tony Linard
Stephen Franaszek
Bruce King

Lawrence Berkeley National Laboratory

Genomics Division


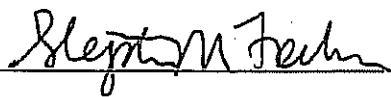
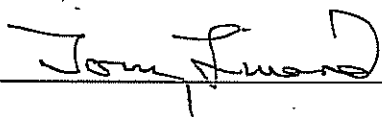

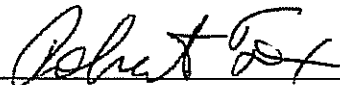
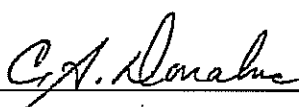

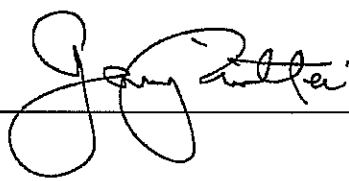



2006 Integrated Functional Appraisal

June – August 2006

Final Report - November 2006

IFA Team Members

<u>Member</u>	<u>Signature</u>	<u>Date</u>
Bruce King IFA Team Leader - EH&S		11/15/06
Stephen Franaszek Genomics Division, JGI – Division Safety Coordinator		11/20/06
Tony Linard Genomics Div, Genomics West – Division Safety Coordinator		11/15/06
Nancy Rothermich (& Amy Tanouye, Marty White, Chan Ho Yi) EH&S Subject Matter Expert – Waste Management		11-15-06
Robert Fox EH&S Subject Matter Expert – Environmental Protection		11-15-06
Christine Donahue EH&S Subject Matter Expert – Radiation Protection		11-15-06
Thomas Caronna (& Matt Kotowski) EH&S Subject Matter Expert – Occupational & Electrical Safety		11-15-06
Gary Piermattei EH&S Subject Matter Expert – Fire Protection		11-15-06
Ken Barat EH&S Subject Matter Expert – Laser Safety		11-15-06

Executive Summary

The Integrated Functional Appraisal (IFA) is a key component of Lawrence Berkeley National Laboratory's (LBNL's) Integrated Safety Management (ISM) system, and forms one of the three tiers of LBNL's Environment, Safety and Health (ES&H) self-assessment program. The Environment, Health and Safety (EH&S) Division conducts an IFA for each Laboratory division every three years.

The 2006 Genomics Division IFA was conducted between June and August 2006 at the Joint Genome Institute (JGI) and Genomics West (at Building 84). The focus of this year's IFA was on work that involves higher or special hazards, Formal Authorizations, or permits. These focus areas were selected since they involve higher-priority types of work authorization as described in the PUB-3000 Health & Safety Manual. Authorizations that were reviewed and their authorization categories included:

- **Line Management Authorizations** for work that is that involves special hazards that may require specialized training or certification and result in some license, permit, or certification. These authorizations are administered at JGI and include: Energized Electrical Work Permits, Surface Penetration Permits, lockout/tag work, and fork trucks.
- **Formal Authorizations** for work that involves increased hazards. These authorizations are authorized by the Genomics and EH&S Divisions (or LBNL Committee) and include: Biological Use Authorizations, Radiological Work Authorizations, Laser Activity Hazard Documents, Fire Safety Permits, and collection and handling areas for wastes that are hazardous.
- **Facility-Based Authorizations** for the PGF facility that include environmental, waste, and hazardous materials permits and requirements.

This IFA report provides an ES&H assessment of each authorization, permit, or operation that was assessed including findings, observations, recommendations, corrective actions and/or noteworthy practices. In general, the operations that were assessed appear to use principals of ISM, follow the conditions of the applicable authorization or permit, and operate in a safe and compliant manner. Specific areas for improvement include sixteen (16) findings and sixteen (16) observations with corresponding corrective actions and recommendations, respectively. Deficiencies must be logged into the Corrective Action Tracking System (CATS) and then corrected or resolved. Two (2) noteworthy practices involved JGI laser curtain areas and maintenance of records by JGI facilities personnel. A recommendation is also made for the Genomics Division to better identify, document, and monitor the types of authorizations and permits identified in this IFA (e.g., in documents such as the Genomics Division ISM Plan and the LBNL Hazards, Equipment, Authorization and Review System database).

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1 Introduction

The Integrated Functional Appraisal (IFA) is a key component of Lawrence Berkeley National Laboratory's (LBNL's) integrated safety management (ISM) system, and forms one of the three tiers of LBNL's Environment, Safety and Health (ES&H) self-assessment program. The Environment, Health and Safety (EH&S) Division conducts an IFA for each Laboratory division every three years.

The 2006 Genomics Division IFA was conducted between June and August 2006. The focus of this year's IFA was formal work authorizations, permits, and other higher hazard work at the Joint Genome Institute (JGI) and Genomics West (at Building 84). This report provides an ES&H assessment of each authorization, permit, or operation that was assessed. Assessment input includes noteworthy practices, findings, observations, and/or recommendations.

1.1 Laboratory Management IFA Oversight

The EH&S Division and Office of Contract Assurance jointly oversee the implementation of the IFA through a steering committee that assures maximum audit effectiveness is achieved. The IFA Steering Committee members are listed in Figure 1.

Figure 1 2006 IFA Steering Committee

Member	LBNL Organization
Michelle Flynn	Office of Contract Assurance (OCA) – Chair
John Chernowski	OCA
Paul Blodgett	EH&S - Industrial Hygiene
Jack Salazar	EH&S – Liaison Coordinator
Richard DeBusk	EH&S - Occupational Safety
Ross Fisher	EH&S - IFA Coordinator

1.2 IFA Purpose

The purpose of this IFA was to conduct a physical inspection and technical environmental and occupational safety and health audit of the division's hazardous operations, and the controls and programs used to mitigate the identified hazards. This appraisal evaluates compliance with LBNL policies and federal, state and local regulations. The IFA team reports appraisal results and offers corrective actions and recommendations to the division as appropriate. The IFA process also provides an Operational Awareness window for LBNL's Berkeley Site Office DOE program liaisons.

1.3 Scope

The focus of this year's IFA was formal work authorizations, hazardous work permits, and other higher hazard work including: Radiological Work Authorizations (RWA), Biological Use Authorizations (BUA), Activity Hazard Documents (AHD), Satellite Accumulation Areas (SAA), Waste Accumulation Areas (WAA), Radiological Waste Collection Areas (RWCA), environmental permits, autoclaves, fire permits, ultracentrifuges, energized work permits, lock-out/tag-out, surface penetration permits, and fork-trucks.

2 Appraisal Process

2.1 Team

2.1.1 Team selection

IFA Field Guidance: Team members included Division Safety Coordinators, EH&S personnel already assigned to the Genomics Division to provide routine EH&S support, and a few EH&S personnel selected for their subject matter expertise. Team members are listed in Figure 2.

Figure 2 IFA Team Members

Team Member Name	Team Function	EH&S Group or Other Affiliation
Bruce King	IFA Team Leader and Biosafety Subject Matter Expert (SME)	Industrial Hygiene
Stephen Franaszek	Division Safety Coordinator, Genomics JGI	Genomics Division
Tony Linard	Division Safety Coordinator, Genomics West	Life Sciences Division
Nancy Rothermich	Hazardous Waste Coordination	Hazardous Waste
Patricia (Amy) Tanouye	Hazardous Waste SME for JGI	Hazardous Waste
Chan Ho Yi	Hazardous Waste SME for Genomics West	Hazardous Waste
Marty White	Biohazardous Waste SME	Hazardous Waste
Christine Donahue	Radiological SME	Radiation Protection
Robert Fox	Environmental SME	Environmental Services
Thomas Caronna	Occupational and Electrical Safety SME	Occupational Safety
Matt Kotowski	Occupational Safety SME	Occupational Safety
Gary Piermattei	Fire Protection SME	Security and Emergency Operations
Ken Barat	Laser Safety SME	Industrial Hygiene

2.1.2 *Team member and DOE roles and responsibilities*

IFA Team Leader: The IFA team leader was responsible for compiling the IFA team; managing the retrieval of all pertinent documents; defining the scope of the IFA with the assistance of the Division Safety Coordinators; coordinating meetings; communicating results to the appraised division; and preparing the IFA report.

IFA Team Members: The IFA team member SMEs were responsible for reviewing applicable documents with respect to their field of expertise, scheduling and conducting field interviews and inspections, and reporting their findings, observations, and summary appraisals.

DOE: Joe Krupa from the Department of Energy (DOE) Berkeley Site Office (BSO) was assigned to this IFA and participated as an observer in some of the appraisals.

2.1.3 *Team meetings*

Meetings, phone conversations, and emails were used to announce, scope, and plan this IFA for work conducted at both JGI and Genomics West. Specific meetings that were held are listed in Appendix A. A draft IFA plan was developed early in the process (i.e., May) and presented for input at each meeting or contact. Meetings were held with the following personnel and groups: JGI Safety Committee, JGI/Genomics management meetings, JGI and Genomics West Division Safety Coordinators, EH&S subject matter experts. The DOE Berkeley Site Office (BSO) Program Lead was invited to planning meetings with SMEs and the Genomics West Division Safety Coordinator as part of LBNL/BSO Operational Awareness.

2.2 **Planning the Appraisal**

2.2.1 *Documentation and database reviews*

Prior to and during planning meetings documentation was collected, reviewed, and used to develop the IFA plan. Documentation included institutional program documents, policies and procedures, formal authorizations, and hazardous work permits as noted below. Specific authorizations and permits that were collected and reviewed are listed in Appendix B. No confined spaces, cranes or hoists, NEPA/CEQA documents, Radiological Work Permits, or Safety Analysis Documents were identified or included in the IFA.

General Information

- Division ISM Plan
- PUB 5344, LBNL EH&S Self-Assessment Program
- PUB 3000, Chapter 6, Safe Work Authorization

- PUB 3000, Chapter 21, Radiation Safety
- OHP Procedures, 705 (RWP Program) and 707 (RWA Program)
- LBNL Biosafety Program and Manual
- PUB 3093 Waste Accumulation Guidelines
- PUB 3000, Chapters pertaining to Hazardous Work Permits
- Facilities ADMN Procedure 053 – Permit to Penetrate Ground or Existing Surfaces of LBNL Property

JGI Facility Permits / Authorizations

- Certified Unified Program Agency (CUPA) Annual Business Authorization/Permit
- Central Contra Costa County Class III Industrial User Permit
- Bay Area Air Quality Management District (BAAQMD) Permit

Formal Work Authorizations

- Radiological Work Authorizations (RWAs)
- Biological Use Authorizations (BUAs)
- Activity Hazard Documents (AHDs)

Hazardous Work Authorizations and Permits

- Energized Work Permits (A and B)
- Fire Safety
- Surface Penetration
- Lock Out/Tag Out
- Waste Management Group information on Waste Accumulation Areas (WAAs) and Satellite Accumulation Areas (SAAs)
- Any other hazard assessment documentation

Other Potential Hazard Work

- JGI Autoclaves
- Ultracentrifuges
- Fork Trucks

2.2.2 *Identification of operations*

Specific locations, operations, authorizations, permits, and documentation that were appraised are listed in Appendix B.

2.2.3 *IFA plan review*

Draft IFA plans were presented to Genomics Division management and Division Safety Coordinators for review and input as noted in Appendix A. The IFA plan was also submitted to and approved by the IFA Steering Committee on 6/6/06 and 6/30/06, respectively.

2.2.4 *Scheduling interviews and field audits*

In general, specific interviews and field audits were scheduled by the EH&S Subject Matter Expert who was also the lead assessor, as noted in Appendix B.

2.3 Field Audits and Interviews

Appraisals included inspections of work areas, review of documentation (e.g., authorizations, permits, procedures, survey tags, logs), observations of personnel, interview of personnel, review of training (EHS courses and on-the-job) and records, and/or completion of inspection checklists.

Generally, supervisors or PIs were invited to participate in appraisals at pre-scheduled times or dates. Lead personnel sometimes represented the work to be appraised. Personnel who participated and the dates of appraisals are listed in Appendix B.

During the field audit, EH&S team members compared their observations to the written formal work authorizations, permits, or procedures. Field inspection forms or checklists included in Appendix C were also used for the following appraisals: Radiological Work Authorizations (RWA), Biological Use Authorizations (BUA), Activity Hazard Documents (AHD), Satellite Accumulation Areas (SAA), and Radiological Waste Collection Areas (RWCA).

3 Reporting Results

3.1 Introduction

This section of the IFA report summarizes general results of the IFA by work topic categories. Results include noteworthy practices, findings, observations, and recommendations. Additional appraisal results for each authorization, permit, or operation that was assessed are included in the following Appendices:

- Appendix B includes a summary work that was assessed and its compliance or non-compliance status.
- Appendix C includes completed and/or blank inspection checklists
- Appendix D includes a list of findings and observations

Findings are deficiencies that require resolution or corrective action. Findings are requirements because they are based, for example, on LBNL Work Smart Standards, regulations, LBNL policy, permit requirements, authorization requirements, or standard operating procedures.

Observations indicate opportunities or recommendations for improvement. They may be practices and conditions that are not

necessarily out of compliance as observed, but could lead to non-compliance under other circumstances from those observed, or if left unaddressed. Observations may also represent real hazards or concerns for which there are no adopted standards at LBNL.

3.2 IFA Results Summarized by Work Categories

This section summarizes work categories that were assessed and related results. Note Appendices B, C, and D for specific appraisal results for each authorization, permit, or operation that was assessed.

Biological Use Authorization (Bldg. 84)

2 Findings & 3 Observations

Biological Use Authorizations (BUAs) cover work with biohazardous materials (e.g., Risk Group 2), while Biological Use Registrations cover work with Risk Group 1 materials. In Genomics, only the Rubin group at Building 84 works with Risk Group 2 materials and has a BUA.

The scope of this appraisal was the Rubin lab's biological work in Building 84 and the Rubin BUA B023 as summarized in the Appendix B table. Bruce King and Veena Afzal inspected the laboratory facilities, equipment, and practices using standard Biosafety Level 2 (BL2) containment criteria and the BUA. BL2 containment criteria are specified by the Centers for Disease Control (CDC) and National Institute of Health (NIH) and requirements are detailed in the LBNL Biosafety Manual and Health & Safety Manual (i.e., PUB-3000, Chapter 4, Section 4.7). Criteria and inspection results for this assessment are shown on the LBNL Containment Laboratory Checklist in Appendix C.

In general, this work was found to be compliant with BUA administrative and BL2 containment requirements. The BUA was last updated a year ago and reflects current biological work in the labs. BL2 containment requirements are being met (note checklist in Appendix C) with a few exceptions and recommendations as detailed in Appendix D. Findings and observations include: a) institute a lab coat laundry service, b) replace chairs with cloth seat covers, c) remove or replace bunsen burners in biosafety cabinets, d) ensure the eyewash is posted with a sign and routinely tested, and e) provide hooks on which to hang lab coats.

Radiological Work Authorizations (Bldg. 84)

Zero Findings & 1 Observation

The scope of this appraisal included three Radiological Work Authorizations (i.e., RWA 1035 – Cheng, RWA 1036 – Rubin, and RWA 1128 – Biggin) listed in Appendix B. Chris Donahue and Tony Linard inspected each radiological work area using a RWA appraisal checklist and requirements specified in EHS Procedure 707 (RWA Program),

PUB-3000 - Chapter 21 (Radiation Safety), and 10 CFR 835. Criteria for and results from the appraisal are summarized on the RWA appraisal checklist in Appendix C.

In summary, the three RWAs are current and authorized users have received radiation worker training as required. All areas were properly posted and housekeeping was very good. The Radioisotope Journals (RIJs) were reviewed for each project and all required records were on file. However, the appraisers observed that the RIJs were overflowing with older records and a recommendation was made and implemented to maintain in the RIJ only records generated in the past three years (note details in Appendix D).

Ultracentrifuges (Bldg. 84 and JGI)

Zero Findings & 1 Observation

The scopes of these appraisals were the Ultracentrifuges in 84-265 (Rubin) and 400-446 (Boore) as listed in the Appendix B table. Safety Engineers (i.e., Matt Kotowski and/or Tom Caronna), Division Safety Coordinators (i.e., Tony Linard and Steve Franazek), and researchers (i.e., Keith Lewis at 84 and Jeff Boore at JGI) met at the ultracentrifuge, reviewed ultracentrifuge rotor maintenance, and compared existing rotor maintenance to general centrifuge manufacturer requirements. The objective of this assessment was to ensure safety of rotors so as to preclude catastrophic failures. Appraisal results are summarized further below:

- 84-265 Ultracentrifuge: The log was up to date (last entry was 8/29/06 Rev ct. was 811826) and rotor had approximately 80 % use left. Additionally, the ultracentrifuge has an armor plate that was installed by the manufacturer as a safety barrier. The interview with Keith Lewis indicated that he was knowledgeable and aware of required safety practices.
- 400-446 Ultracentrifuge: This ultracentrifuge had a log book and the last entry in the book was about a year earlier. The machine was reportedly only used about once a year. The industry practice is to enter the use (time and speed) for each rotor on a centrifuge in a log and then have the log and the rotor reviewed by the service contractor. The ultracentrifuge users did not have a service contractor since they hardly ever use the machine. With the little use they have, it was not clear that they would ever get to the end of the useful life of the rotor. An observation and recommendation was made that the users get a service contractor and they have the machine looked at least once a year (note Appendix D). The ultracentrifuge users were agreeable to this recommendation.

Laser Activity Hazard Document (JGI)*1 Finding, Zero Observations, & 1 Noteworthy Practice*

The scope of this appraisal was JGI Activity Hazard Document (AHD) 2032 which covers controls for service of Class 3b lasers (Class 1 laser products) for both MegaBACE and Applied Biosystem (ABI) systems as summarized in the Appendix B table. Ken Barat met with the laser "PI" Chris Daum and others and inspected the equipment, controls, and practices using a Laser Operations Safety Audit Form (note Appendix C), the AHD, and criteria specified in PUB-3000, Chapter 16, Lasers.

The lasers operations were generally compliant with one finding and one noteworthy practice highlighted. The finding is detailed in Appendix D and is based on the fact that the laser work on the ABIs is performed onsite by an outside vendor and this work is not covered in the AHD. The noteworthy practice is listed in Section 3.2.1 and involves the laser operation's implementation of laser light curtains to block light from other production areas.

Hazardous Waste SAAs & WAAs (JGI and Bldg. 84)*Recommendations: yes*

All Satellite Accumulation Areas (SAAs), Radioactive Waste Collection Areas (RWCAs), and Waste Accumulation Areas (WAAs) at JGI and Building 84 Genomics were inspected by Generator Assistants from Hazardous Waste Management (i.e., JGI - Amy Tanouye and Bldg. 84 – Chan Ho Yi). The table below summarizes the number of waste areas inspected. Specific locations of waste areas are summarized in Appendix B.

Number of Genomics Waste Areas Inspected			
Building	# SAAs	# RCWAs	# WAAs
84	4	3	0
100	8	0	1
400	16	0	1

The Waste Generator Assistants assessed each waste area using the criteria listed in the SAA or RWCA Requirements Checklists included in Appendix C and the LBNL waste guidelines (e.g., Generator Guidelines PUB-3092 and WAA Guidelines PUB-3093). Results of each area's assessment and recommendations were discussed with the participants during or immediately following each inspection (as noted in Appendices B and D). Recommendations included topics such as labeling, dating labels, storage times, and label legibility.

Autoclaves (JGI)*2 Findings & 8 Observations*

The scope of this appraisal was the autoclave operations at JGI in 100-142 and 143 and 400-418 as summarized in the Appendix B table. JGI autoclaves biological waste prior to its ultimate disposal in the sanitary landfill as non-biohazardous waste. These operations are operated by a Fisher-Scientific subcontractor following Standard Operating Procedures (SOPs). Contract oversight is provided by JGI Operations.

Autoclaving is required because the National Institute of Health (NIH) Guidelines for Research Involving Recombinant DNA Molecules (NIH Guidelines) require recombinant liquid or solid wastes to be decontaminated prior to disposal. JGI biological waste disposal requirements are covered in the JGI autoclave SOPs and LBNL policies. LBNL policies include: a) The "Medical Waste" section of the LBNL Waste Management policies (i.e., Biohazardous Waste Disposal at JGI/PGF), and b) LBNL Biosafety Manual (Sterilization).

The following groups met to inspect the autoclave operations, review the SOPs, and review biological waste and autoclave operation requirements: Tony Conlon and Teresa Green (Fisher-Scientific), Nora Nichols and Mike Williams (JGI), and Bruce King and Marty White (EH&S).

In general, the autoclave operation is operated in a proper and compliant manner. Two findings and eight observations are listed in Appendix D. The most significant finding was the need to ensure that records of routine autoclave biological indicator tests are maintained. These tests and records provide assurance that the autoclave is sterilizing the biological materials.

Environmental, Waste, and Hazardous Materials**Permits & Requirements (JGI)***4 Findings & 2 Observations*

Unlike most LBNL research divisions, Genomics has a set of environmental permits and requirements associated with the Production Genome Facility (PGF). Maintenance of these permits is shared with EH&S, while implementation of the permit requirements is primarily the responsibility of JGI. Copies of the PGF/JGI permits can be found at the LBNL Environmental Services webpage at

<http://www.lbl.gov/ehs/esg/permitfortable/operatingpermitstable.html>.

Permits, plans, and requirements include, for example:

- Certified Unified Program Agency (CUPA) Annual Business Authorization/Permit under the Contra Costa Health Services, Hazardous Materials Program. This permit covers the following CUPA programs and JGI plans:

- Hazardous Materials Business Plan. Copies of this annual Plan are maintained by JGI and EH&S. Data for this plan is derived from chemical inventory information entered by JGI into the LBNL Chemical Management System (CMS).
- Hazardous Waste Generation which is covered by LBNL Waste Management requirements and policies.
- Above Ground Petroleum Storage Tanks, and JGI/PGF Spill Prevention Control and Countermeasure (SPCC) Plan for the 4,000 gallon aboveground diesel storage tank for the emergency generators. The SPCC Plan includes a diesel storage tank quarterly inspection form.
- Central Contra Costa County Class III Industrial User Permit for the Central Contra Costa County Sanitary District (CCCSD). This permit includes and requires:
 - PGF Slug Discharge Prevention & Contingency (SDPC) Plan. The SDPC Plan includes a JGI Slug Control Program Inspection Form for checking implementation of Best Management Practices (BMPs) on a monthly basis.
 - Completion of a Periodic Compliance Report (PCR) every six months (due January and July 31st).
 - Recording the handling, monitoring, and disposal of all process liquids, sludges, solids, and hazardous wastes.
- Bay Area Air Quality Management District (BAAQMD) Permit to Operate, Plant #14549. This permit covers operation and maintenance of two JGI emergency diesel generators in the outdoor fenced area between Buildings 100 and 500. This permit requires monthly logs or records of generator operation.

This IFA appraisal of the JGI environmental, waste, and hazardous materials permits covered the permits listed above as summarized in the Appendix B table. Robert Fox, Stephen Franaszak, Bruce King, Joe Krupa, Greg Stanley, and Ray Turner met and reviewed the permit documents, permit requirements, and conducted some field inspections. JGI was generally in good compliance with the permits. Findings and observations related to environmental and hazardous materials permits are noted in Appendix D. Findings include: a) implement aboveground storage tank inspections; b) implement engine generator logs; c) complete spill prevention training; and d) chemical users update their chemical inventories routinely. Observations include: a) recommend development of a more comprehensive plan and system for maintaining and checking documentation of permits, inspections, and logs; and b) recommend removing BMP inspections that do not specifically help in preventing unauthorized discharges to the sanitary sewer.

Fire Safety Permits (JGI)*Zero Findings & 1 Observation*

An appraisal was conducted via telephone of JGI's Fire Safety Permit program. Fire Marshal Gary Piermattei reviewed with Greg Stanley his practice of filling out the Fire Safety Permits (i.e., Fire Safety Permit For Hot Work or Hazardous Operation) and faxing them to the Fire Marshal's office for filing. Every item on the Fire Safety Permit was reviewed. G. Stanley appeared to understand the importance and the technical details of his obligations in acting as the Permit Authorizing Individual. As training always benefits overall safety, a recommendation was made that G. Stanley take the EHS 535 class, Hot Work Permit Training. This recommendation and its completion on August 8, 2006, are noted in Appendix D.

Energized Electrical Work Permits, Surface Penetration Permits, and Lockout/Tagout (JGI)*Zero Findings, Zero Observations, & 1 Noteworthy Practice*

An appraisal was conducted at JGI with the Facilities group based on the authorizations and standards listed below.

- Energized Electrical Work Permits: PUB-3000 Chapter 8, OSHA, and LBNL Facilities policy
- Surface Penetration Permits: PUB-3000 Chapters 8 and 10, OSHA, and LBNL Facilities penetration policy ADMIN-053
- Lockout/tagout:: PUB-3000 Chapter 18

Tom Caronna met with Greg Stanley and Joe Herrera. The table in Appendix B provides a summary of the work that was assessed.

After interviews and validation of authorizations, permits and logs all work appeared to be compliant and policies are being followed without exception. These authorizations include Energized Electrical Permits for diagnostics and testing and Surface Penetration Permits. Permits and pertinent authorizations are obtained for any work efforts where they are required. These permits and authorizations are filled out completely and had the proper signatures and documentations. Further they are filed and accessible in a manner that is noteworthy (note Section 3.2.1).

Interviews with G. Stanley and J. Herrera confirmed that they were both knowledgeable and compliant in the policies and procedures of these authorizations.

All logs for Lockout/Tagout appear to be complete and up to date. All devices and components to accomplish these tasks appear to be properly maintained, certified, unmodified, and in good working order.

All training for these authorizations appeared to be complete. There are no findings or recommendations.

Forktrucks (JGI)*Zero Findings & Zero Observations*

Tom Caronna and Matt Kotowski interviewed Greg Stanley and Joe Herrera who are the forklift operators at JGI and checked their forklift operator permits. These permits were still valid, in good order, and in conformance with Lab policy as stated in PUB-3000, Chapter 5. In addition, Tom Caronna appraised the use of forklifts by two JGI employees stationed at the loading dock (400-415). This appraisal was conducted by phone and email in addition to review of LBNL databases. The appraisal found that training and certifications are up to date, log books are current, all permits are valid and current, and regular safety meetings are held. The forklift and fixture equipment are the same for both groups of personnel that were evaluated. No problems were identified. There are no findings or recommendations.

3.2.1 Noteworthy practices

The following practices and conditions are recognized for their excellence:

Figure 3 Noteworthy Practices Observed During the 2006 IFA

Item	Practice Observed	Basis	Lab-wide Applicability
1	AHD 2032. JGI staff have a dedicated laser service area (e.g., light curtains) to service the MegaBACE units.	Use of laser curtains block potential laser radiation from other areas and preclude other occupants from having to participate in laser controls.	No
2	The JGI Facilities group keeps excellent records in binders of the permits it issues (e.g., Energized Electrical Work Permits, Surface Penetration Permits, Lockout/Tagout). Permits and authorizations were very well organized, easily accessible, filled out completely, and had the proper signatures.	There is a requirement and need to maintain records of the permits that are issued.	No

4 Corrective Actions and System Improvements

Deficiencies noted during the IFA and listed in Appendix D require corrective action and must be entered into the Corrective Actions Tracking System (CATS) by the Genomics Division. Any deficiencies that are discovered but corrected on the spot do not need to be entered into CATS.

In addition to the specific recommendations in this report relative to each operation, authorization, or permit, EH&S finds that Genomics Division management needs to better identify, document, and monitor the types of work, authorizations, and permits identified in this IFA. Such authorizations and permits are currently documented to varying degrees in documents such as the Genomics Division ISM Plan and the LBNL Hazards, Equipment, Authorization and Review (HEAR) System database. These documents and systems should be improved. For example:

- **ISM Plan** 1 Finding

The scope of work that is authorized in the Genomics Division ISM Plan is fairly generic and does not cover or reference the range of hazardous work, authorizations, and permits covered in this IFA or provide sufficient detail for management to know what work is authorized or permitted and the form of the authorization or permit. The ISM Plan must cover and summarize Genomics Line Management Authorizations, Formal Authorizations, and Facility-Based Authorizations at JGI and Building 84. The ISM Plan must also cover or reference the Division's processes for managing and documenting authorizations and permits. Requirements related to the above comments are incorporated into PUB-3000 (Chapter 6, Safe Work Authorizations) and PUB-3140 (Integrated Environment, Health & Safety Management Plan – Integrated Safety Management (ISM) System). Note the Finding in Appendix D related to these needed additions to the Genomics Division ISM Plan.

- **HEAR System** 1 Finding

The HEAR system database is used at LBNL as an ISM tool to identify and track hazards, equipment, authorizations, and reviews. The HEAR system is being used for work at the JGI/PGF, but not for work at Building 84.

- JGI/PGF: Information for JGI/PGF is being maintained in the HEAR system, although the information does not include the full range of authorizations and permits covered in this IFA. But the HEAR system may not be designed to allow entry of all types of authorizations and permits (e.g., permits for outside locations or whole buildings). JGI/PGF should try to include additional information into the HEAR system, as feasible.

- Building 84: The HEAR system is not being used by Genomics to track hazards, equipment, or authorizations at Building 84. A separate Life Sciences system may be in use. Genomics needs to specify the tracking system for Building 84 work (e.g., in the Division ISM Plan) or start using the HEAR system for Building 84 work.

5 Conclusion

Principles of ISM and LBNL ISM policies require that all work is reviewed and authorized as described in Chapter 6 of PUB-3000 (Safe Work Authorizations), PUB-3140 (Integrated Environment, Health & Safety Management Plan), and the Division's ISM Plan. These ISM policies form the over-arching framework for conducting work safely and appraising its safety.

The focus of this year's IFA was on work that involves higher or special hazards, Formal Authorizations, or permits as listed in Appendix A. In general, the operations that were assessed appear to use principals of ISM, follow the conditions of the applicable authorization or permit, and operate in a safe and compliant manner. Specific areas for improvement are noted in Appendix D and include sixteen (16) findings and sixteen (16) observations with corresponding corrective actions and recommendations, respectively. Deficiencies must be logged into the Corrective Action Tracking System (CATS) and then corrected or resolved. Two (2) noteworthy practices involved JGI laser curtain areas and maintenance of records by JGI facilities personnel. A finding is also made for the Genomics Division to better identify, document, and monitor the types of authorizations and permits identified in this IFA (e.g., in documents such as the Genomics Division ISM Plan and the LBNL Hazards, Equipment, Authorization and Review System database).

Appendices

Appendix A - IFA Team Meetings, Inspections and Interviews

Appendix B – Summary of Appraised Work

Appendix C – Inspection Checklists

Appendix D – Findings and Observations

Appendix A - IFA Team Meetings, Inspections and Interviews

(See Appendix B for Specific Inspection Details)

Meeting Date	Topic	Attendees
5/9/06 6/6/06	IFA Purpose and Preview IFA Purpose and draft plan presentation	JGI Safety Committee
5/15/06	IFA Purpose and draft plan presentation	JGI Management Meeting
6/6/06	Submitted IFA Plan for Steering Committee Approval	Bruce King via email to the IFA Steering Committee via Michelle Flynn
6/8/06	IFA Team Planning – SAAs, WAAs, and Environmental Permits	Robert Fox, Bruce King, Nancy Rothermich, Amy Tanouye, Marty White, Chan Ho Yi
6/8/06	IFA Team Planning – Safety: Energized Work Permits, Lock/Tag Out, Surface Penetration Permits, Fork Trucks, Ultracentrifuges	Tom Caronna, Richard DeBusk, Bruce King
6/8/06	IFA Team Planning – Radiological Work Authorizations	Bruce King and Chris Donahue
6/8/06	IFA Plan Review at the JGI Strategic Management Meeting	Jim Bristow, Eddy Rubin, Paul Richardson, Susan Lucas, Darren Platt, Dan Rokhsar, Ray Turner, Len Pennacchio, Bruce King, Steve Franaszek

Meeting Date	Topic	Attendees
6/12/06	IFA Plan Review and Discussion - Genomics West (B84) Operations	Ross Fisher, Bruce King, Tony Linard
6/16/06	B84 Radiological Work Authorization Appraisals and Inspections	Chris Donahue, Tony Linard
6/28/06	JGI B500 Forklifts	Matt Kotowski, Tom Caronna, Joe Herrera, Greg Stanley
6/28/06	400-446 Ultracentrifuge	Matt Kotowski, Tom Caronna, Jeff Boore, Steve Franaszek
6/28/06	JGI Energized Work, Lockout/Tagout, and Surface Penetration Authorizations, Permits, and/or logs	Tom Caronna, Matt Kotowsky, Greg Stanley, Joe Herrera, Stephen Franaszek.
6/30/06	Received IFA Steering Committee Approval	From Michelle Flynn via email to Bruce King
6/30/06	JGI Environmental Permits Appraisal and Inspection	Bruce King, Robert Fox, Greg Stanley, Ray Turner, Joe Krupa, Stephen Franaszek
7/20/06	JGI Autoclave Appraisal and Inspection	Tony Conlon, Teresa Green, Bruce King, Nora Nichols, Marty White, Mike Williams

Meeting Date	Topic	Attendees
7/21/06	B84 Rubin Lab Biological Use Authorization Appraisal and Inspection	Veena Afzal, Bruce King
7/24/06	JGI Laser AHD Appraisal and Inspection	Ken Barat, Chris Daum, Don Miller, Marty Pollard
8/03/06	Fire Permits Telephone Conference Call	Gary Piermattei and Greg Stanley
8/30/06	JGI Loading Dock Forklifts phone, email , and database appraisal	Ron McKeever, Tom Caronna
8/31/06	84-265 Ultracentrifuge	Keith Lewis, Tom Caronna

**Appendix B – Summary of Appraised Work
Locations, Operations, Authorizations, Permits,
and Documentation**

Appendix B

Summary of Appraised Work – Locations, Operations, Authorizations, Permits, and Documentation

Bldg	Rm	PI or Supervisor	Additional Contact Person	Authorization, Permit, or Operation Type	Title or Number	EHS Lead Assessor	Appraisal Date	Participants	Description of Operation or Work Areas Inspected	Summary of Compliance or Non-Compliance Status	Findings or Observations in Append. E	Appraisal Group
84	211	Rubin, Eddy	Afzal, Veena	Biological Use Authorization (BUA)	B023-072905 Transgenic Mouse Production and Identification of New Genes In Transgenic Mice	King, Bruce	07/21/06	Veena Afzal, Bruce King	Rubin Lab in 84-211, 211A, and 255A	Generally good compliance with biosafety requirements with a few findings & observations noted in Appendix D. Also see completed biosafety checklist in Appendix C.	Yes	84 Bio
84	101, 218, 263 [74-330]	Cheng, Jan-Fang		Radiological Work Authorization (RWA)	1035	Donahue, Chris	06/16/06	Chris Donahue, Tony Linard	RWA work and storage areas and required documentation (e.g., Radioisotope Journals [RIJs] and posting)	The RWA is in compliance with RWA Program requirements, but a recommendation regarding RIJs is noted in Appendix D. Also see completed RWA appraisal checklist in Appendix C.	Yes	84 Rad
84	101, 255, 263 [74-330]	Rubin, Eddy	Shoukry, Malak	Radiological Work Authorization (RWA)	1036	Donahue, Chris	06/16/06	Chris Donahue, Tony Linard	RWA work and storage areas and required documentation (e.g., Radioisotope Journals [RIJs] and posting)	The RWA is in compliance with RWA Program requirements, but a recommendation regarding RIJs is noted in Appendix D. Also see completed RWA appraisal checklist in Appendix C.	Yes	84 Rad
84	201, 220, 263	Biggin, Mark		Radiological Work Authorization (RWA)	1128	Donahue, Chris	06/16/06	Chris Donahue, Tony Linard	RWA work and storage areas and required documentation (e.g., Radioisotope Journals [RIJs] and posting)	The RWA is in compliance with RWA Program requirements, but a recommendation regarding RIJs is noted in Appendix D. Also see completed RWA appraisal checklist in Appendix C.	Yes	84 Rad
84	101	Cheng, Jan-Fang		SAA	N/A	Yi, Chan Ho	06/23/06	Cheng, Jan-Feng	Hazardous waste accumulation, Radioactive waste accumulation	Results discussed with participants	No	84 SAA
84	220	Biggin, Mark		SAA	N/A	Yi, Chan Ho	06/29/06	Ogawa Mobuo, Li Xiaoyong	Hazardous waste accumulation/ Radioactive waste accumulation	Results discussed with participants	See Appendix D	84 SAA
84	255	Rubin, Eddy	Shoukry, Malak	SAA	N/A	Yi, Chan Ho	06/29/06	Len Pennacchio, Keith Lewis	hazardous waste accumulation	Results discussed with participants	No	84 SAA

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Summary of Appraised Work – Locations, Operations, Authorizations, Permits, and Documentation

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84	263	Cheng, Jan-Fang		SAA	N/A	Yi, Chan Ho	06/23/06	Cheng, Jan-Feng	Hazardous waste accumulation, Radioactive waste	Results discussed with participants	No	84 SAA
84	275	Cheng, Jan-Fang		SAA	N/A	Yi, Chan Ho	06/23/06	Cheng, Jan-Feng	Hazardous waste accumulation	Results discussed with participants	No	84 SAA
84	265	Rubin, Eddy	Lewis, Keith	Ultracentrifuge	Beckman Optima LE80K	Caronna, Thomas	08/31/06	Keith Lewis, Tony Linard, Tom Caronna	Ultracentrifuge use: Reviewed log, work practices, and training	Log was up to date (last entry was 8-29-06 Rev ct. was 811826) Approx. 80 % use left. Additionally apparatus has an installed armor plate by manufacturer as a safety barrier. Interview with Keith Lewis showed that he was knowledgeable and aware of required safety practices.	No	84 Safety
100, 400	142, 143, 418	Nichols, Nora	Bibbs, Dana (Fisher Scientific)	Autoclave	Autoclave Standard Operating Procedures (SOP)	King, Bruce & White, Marty	07/20/06	Tony Conlon, Teresa Green, Bruce King, Nora Nichols, Marty White, Mike Williams	JGI Autoclave and glassware washing operations in rooms 142, 143, and 418 operated by Fisher-Scientific	In general, the autoclave operation is operated in a proper and compliant manner. Two findings and eight observations are listed in Appendix D. The most significant finding was the need to ensure that records of routine autoclave biological indicator tests are maintained.	Yes	JGI Autoclave

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Bldg	Rm	PI or Supervisor	Additional Contact Person	Authorization, Permit, or Operation Type	Title or Number	EHS Lead Assessor	Appraisal Date	Participants	Description of Operation or Work Areas Inspected	Summary of Compliance or Non-Compliance Status	Findings or Observations in Append. E	Appraisal Group
100, 400	Various	Turner, Ray	Franaszek, Stephen	Certified Unified Program Agency (CUPA) Annual Business Authorization Permit	Hazardous Materials Business/Mgt. Plan	Salazar, Jack and King, Bruce	06/30/06	Stephen Franaszek, Robert Fox, Bruce King, Joe Krupa, Greg Stanley, Ray Turner	The general status of JGI's system to update the chemical management system (CMS) was reviewed. Types and quantities of hazardous materials reported in the Business Plan were also reviewed by the group to determine if the reporting was logical. Field inspections were conducted of the quantity of 3 of the 5 reportable categories of hazmat: a) B100 WAA had 5 drums versus the plan limit of 6 drums, b) B100 cylinder storage area had 6210 ft3 of inert gas versus the plan limit of approximately 10,000 ft3, and c) B400 4,000 gal. aboveground diesel storage tank was present.	Types and quantities of threshold hazardous materials reported in the Hazardous Materials Business Plan appeared to be correct. There is one recommendation in Appendix D regarding CMS updating.	Yes	JGI Environ
100, 400	Various	Turner, Ray	Franaszek, Stephen	Certified Unified Program Agency (CUPA) Annual Business Authorization Permit	JGI/PGF Spill Prevention Control and Countermeasure Plan (SPCC), May 2003, revision 1.0	Fox, Robert	06/30/06	Bruce King, Robert Fox, Greg Stanley, Ray Turner, Joe Krupa, Stephen Franaszek	4,000 above-ground gallon diesel tank for building emergency generator in outdoor fenced area between Bldgs. 100 and 500.	JGI is generally compliant with the requirements of the permit and the JGI SPCC. There are two findings noted in Appendix D regarding the need for maintaining diesel tank quarterly inspection forms and completing annual SPCC training.	Yes	JGI Environ

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Bldg	Rm	PI or Supervisor	Additional Contact Person	Authorization, Permit, or Operation Type	Title or Number	EHS Lead Assessor	Appraisal Date	Participants	Description of Operation or Work Areas Inspected	Summary of Compliance or Non-Compliance Status	Findings or Observations in Append. E	Appraisal Group
100, 400	Various	Turner, Ray	Franaszek, Stephen	Sanitary Sewer Permit	Central Contra Costa County Class III Industrial User Permit (Expires 12/31/08), and PGF Slug Discharge Prevention & Contingency Plan (SDPC) for CCCSD (3/24/06)	Fox, Robert	06/30/06	Bruce King, Robert Fox, Greg Stanley, Ray Turner, Joe Krupa, Stephen Franaszek	Programic review of slug plan implementation status that covers all indoor and outdoor operations at JGI that might affect discharges to the sanitary sewer.	JGI is generally compliant with the requirements of the permit. There is one recommendation in Appendix D regarding removal of BMP inspections that do not specifically help in preventing unauthorized discharges to the sanitary sewer.	Yes	JGI Environ
JGI	Outside between 100 and 500	Turner, Ray	Stanley, Greg	Bay Area Air Quality Management District (BAAQMD) Permit	BAAQMD – Permit to Operate, Plant #14549, Expires 7/1/06	Fox, Robert	06/30/06	Bruce King, Robert Fox, Greg Stanley, Ray Turner, Joe Krupa, Stephen Franaszek	Operation and maintenance of two JGI emergency diesel generators in outdoor fenced area between Bldgs. 100 and 500.	JGI is generally compliant with the requirements of the permit. There is one finding in Appendix D regarding maintenance of a monthly engine generator operating log.	Yes	JGI Environ
100, 400	Various	Stanley, Greg	Stanley, Greg	Fire Safety Permit	Greg Stanley issues fire permits	Piermattei, Gary	08/03/06	Greg Stanley, Gary Piermattei	Reviewed permits	Suggested Greg attend EHS 535, which he completed by 08/08/06	Yes	JGI Fire
100	121	Daum, Christopher	Daum, Christopher	Activity Hazard Document (AHD)	AHD 2032, DNA Sequencing Units	Barat, Ken	07/24/06	Ken Barat, Chris Daum, Don Miller, Marty Pollard	JGI rooms with Class 1 laser products, in particular gene sequencers, MegaBACEs, and Applied Biosystem units (ABIs)	Generally compliant, but AHD is inaccurate in describing who does laser service and the controls in effect at that time.	Yes	JGI Laser
100	119	Pollard, Marty	Alex Copeland	SAA	N/A	Tanouye, Amy	06/27/06	Alex Copeland, Stephen Franaszek	Hazardous waste accumulation	Results discussed with participants	No	JGI SAA
100	144	Harmon-Smith, Miranda	Harmon-Smith, Miranda	SAA	N/A	Tanouye, Amy	06/29/06	Miranda Harmon-Smith	Hazardous waste accumulation	Results discussed with participants	No	JGI SAA
100	139 I,M,H,J,K	Galvina-Del Rio, Tijana	Galvina-Del Rio, Tijana	SAA	N/A	Tanouye, Amy	06/29/06	Miranda Harmon-Smith	Hazardous waste accumulation	Results discussed with participants	See Appendix D	JGI SAA

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100	140 D,E	Galvina-Del Rio, Tijana	Galvina-Del Rio, Tijana	SAA	N/A	Tanouye, Amy	06/29/06	Tijana Glavin Del Rio	Hazardous waste accumulation	Results discussed with participants	No	JGI SAA
100	Outside	Turner, Ray	Stanley, Greg	Waste Accumulation Area (WAA)	N/A	Tanouye, Amy	06/29/06	Stephen Franaszek	Hazardous waste accumulation	Results discussed with participants	No	JGI SAA
400	412	Hugenholtz, Phil	Warnecke, Falk	SAA	N/A	Tanouye, Amy	06/28/06	Julita Madijska	Hazardous waste accumulation	Results discussed with participants	No	JGI SAA
400	413	Pennacchio, Len	Ustaszewsk a, Anna	SAA	N/A	Tanouye, Amy	06/29/06	Anna Ustaszewska, Len Pennacchio	Hazardous waste accumulation	Results discussed with participants	See Appendix D	JGI SAA
400	446	Boore, Jeff	Morgan, Jenna	SAA	N/A	Tanouye, Amy	06/29/06	Jenna Morgan	Hazardous waste accumulation	Results discussed with participants	See Appendix D	JGI SAA
400	449	Dorsett, Victor		SAA	N/A	Tanouye, Amy	06/27/06	Victor Dorsett,	Hazardous waste accumulation	Results discussed with participants	No	JGI SAA
400	457	Richardson, Paul	Dorset, Victor	SAA	N/A	Tanouye, Amy	06/28/06	Michelle Martinez, Stephen Franaszak, Feng Chen, Chris Hack	Hazardous waste accumulation	Results discussed with participants	No	JGI SAA
400	458	Richardson, Paul	Hack, Chris	SAA	N/A	Tanouye, Amy	06/28/06	Michelle Martinez, Stephen Franaszak, Feng Chen, Chris Hack	Hazardous waste accumulation	Results discussed with participants	See Appendix D	JGI SAA
400	459	Richardson, Paul	Dorset, Victor	SAA	N/A	Tanouye, Amy	06/27/06	Victor Dorsett,	Hazardous waste accumulation	Results discussed with participants	No	JGI SAA
400	Outside	Turner, Ray	Stanley, Greg	Waste Accumulation Area (WAA)	N/A	Tanouye, Amy	06/29/06	Stephen Franaszak	Hazardous waste accumulation	Results discussed with participants	No	JGI SAA
100, 400	Various	None	Franaszek, Stephen	Certified Unified Program Agency (CUPA) Annual Business Authorization Permit	Hazardous Waste Generator (CCR Title 22, section 66262 requirements)	Rothermic h, Nancy	6/27/06, 06/28/06 06/29/06	N/A	Waste from SAAs and WAAs at JGI	Results discussed with participants	See Appendix D	JGI SAA

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Bldg	Rm	PI or Supervisor	Additional Contact Person	Authorization, Permit, or Operation Type	Title or Number	EHS Lead Assessor	Appraisal Date	Participants	Description of Operation or Work Areas Inspected	Summary of Compliance or Non-Compliance Status	Findings or Observations in Append. E	Appraisal Group
400	415	McFarland, Sandra	McKeever, Ron	Fork Trucks	Propane lift at loading dock	Caronna, Thomas	08/30/06	Unavailable during visit on 6/28/06. Appraisal done by email and phone with R. McKeever	Forklift use at loading dock. Forklift operators are Mark Jacintho and Ron McKeever	Training and certifications are up to date. Log books are kept and are current. Regular safety meetings are held and all necessary employees attend.	No	JGI Safety
400	446	Boore, Jeff	Boore, Jeff	Ultracentrifuge	Beckman L8-80M (80K RPM max)	Kotowski, Matt Caronna, Thomas	06/28/06	Jeff Boore, Steve Franaszek, Matt Kotowski, Tom Caronna	Review of logs, work practices, training, and controls for ultracentrifuge in lab in Room 446	Logs were up to date although centrifuge is very rarely used. PI controls work in an effective and compliant manner. Recommend PI get a centrifuge service contractor and have the centrifuge checked once per year	Yes	JGI Safety
500	Ware-house	Stanley, Greg	Herrera, Joe	Fork Trucks	Electric Lift used in warehouse	Kotowski, Matt Caronna, Thomas	06/28/06	Joe Herrera, Greg Stanley, Tom Caronna, Matt Kotowski	Reviewed training, logs, and work practices. Interviewed Joe Herrera and Greg Stanley	All training, maintenance logs, and use logs were up to date, complete, and compliant. Interviews with Greg Stanley and Joe Herrera indicated an acceptable level of understanding of OSHA and LBNL policies.	No	JGI Safety
100, 400	Various	Stanley, Greg	Stanley, Greg	Energized Electrical Work Permits	Filled in Greg Stanley's office	Caronna, Thomas	06/28/06	Greg Stanley and Tom Caronna	Reviewed all A1 and A2 Energized Electrical Work Permits	All A1 and A2 energized work permits were complete and compliant. All necessary information was provided and all signatures for authorization were present. Permits were easily available, organized, and all documentation was in place.	No	JGI Safety

Appendix B

Summary of Appraised Work – Locations, Operations, Authorizations, Permits, and Documentation

Bldg	Rm	PI or Supervisor	Additional Contact Person	Authorization, Permit, or Operation Type	Title or Number	EHS Lead Assessor	Appraisal Date	Participants	Description of Operation or Work Areas Inspected	Summary of Compliance or Non-Compliance Status	Findings or Observations in Append. E	Appraisal Group
100, 400	Various	Stanley, Greg	Sub-contractors	Lock/Tag Out, Active	Greg Stanley and subcontractors do lock/tag out	Caronna, Thomas	06/28/06	Greg Stanley, Tom Caronna	Reviewed written safety plans procedures for Lockout/Tagout and logs for subcontractors.	A sampling of equipment indicated a reasonably high level of compliance for posted multiple point control of hazardous energy procedures. LOTO logs seemed complete and accurate. Interviews with G. Stanley and J. Herrera demonstrated a good understanding of LBNL and OSHA policy requirements.	No	JGI Safety
100, 400	Various	Stanley , Greg	Stanley , Greg	Surface Penetration Permit	Greg Stanley and Matt Hilburn request surface penetrations. James Mankini schedules scanning. Joe Herrera and subcontractors do penetrations.	Caronna, Thomas	06/28/06	Greg Stanley, James Mankini, Tom Caronna	Reviewed all Surface Penetration Permits	All permits were correctly filled out with all authorizing signatures required. All surveys were done and all permit requirements were followed. Permits were posted, then filled and easily attainable.	No	JGI Safety

Appendix C – Inspection Checklists

- **Biosafety**
- **Radiation**
- **Hazardous Waste**
- **Lasers**

BIOSAFETY CONTAINMENT LABORATORY CHECKLIST

Lawrence Berkeley National Lab

EH&S – Biosafety Program

Principal Investigator: Eddy Rubin		Bio Use Auth or Reg #: B023-072905	
Division: Genomics	Labs/Rms. Inspected: 84-211, 211A, 255A		
Inspected By: Bruce King with Veena Afzal		Date: 7/21/06	
<i>Biosafety containment requirements listed below are detailed in the LBNL Biosafety Manual and are based on requirements specified in the CDC/NIH <u>Biosafety in Microbiological and Biomedical Laboratories</u>, 4th ed. and NIH "Guidelines for Research involving Recombinant DNA Molecules" (2002).</i>			
ALL BIOSAFETY LEVELS			
COMPLIES	YES	NO	COMMENTS
Standard Microbiologic Practices and Training			
1. Lab personnel understand biology of organisms used in the lab, have received training in aseptic technique, & completed required training.	X		
2. The lab has an emergency action plan that describes procedures in the event of an accident and the lab personnel are familiar with it.	X		
3. Access to lab is limited or restricted at the discretion of the lab PI.	X		
4. Work surfaces are decontaminated once a day and after any spill of viable material.	X		
5. All contaminated liquid is decontaminated before disposal. Solid medical waste is handled according to the BSL (autoclaved onsite or sent out for treatment)	X		
6. Mechanical pipetting devices are used; mouth pipetting is prohibited.	X		
7. Eating, drinking, smoking, and applying cosmetics are not permitted in the work areas. Food may be stored in cabinets or refrigerators designated and used for this purpose only. Food storage cabinets should be located outside of the work area.	X		Rubin lab has policy to allow drinks at desks in lab, but not combined with lab work. There is a coffee and refrigerator area in Room 257 and lunch area in Room 230.
8. Persons wash their hands after they handle viable materials or animals (after removing gloves) and before leaving the laboratory.	X		
9. Policies for safe handling of sharps are instituted.	X		
10. All procedures are performed carefully to minimize the creation of aerosols.	X		
Laboratory Facilities			
11. The lab is designed so that it can be easily cleaned.	X	X	Room 211A chairs in BL2 tissue culture room have cloth seats
12. Bench tops are impervious to water and resistant to the chemicals used in the area. Lab furniture is sturdy.	X		
13. Spaces between equipment are accessible for cleaning & are clean.	X		
14. Each lab contains a sink for hand washing. Hand soap is at the sink.	X		
15. Openable windows are fitted with fly screens.			N/A
Other			
The emergency eyewash in Room 211 requires quarterly inspection and flow testing by Facilities and an eyewash sign		X	
Bunsen burners in biosafety cabinets are not recommended due to known fire incidents. If burners are needed, burners with safety features should be used.		X	Bunsen burners in all 3 biosafety cabinets in Room 211A

BIOSAFETY LEVEL 2 (BSL-2) ONLY

COMPLIES	YES	NO	COMMENTS
Special Practices			
16. Solid biohazardous waste is placed into biohazard bags within a durable, leak-proof secondary container that is closed before leaving the laboratory. Full, sealed bags are then transferred to barrels at drop-off locations where the barrels are picked up weekly by LBNL's licensed, contracted medical waste hauler for final treatment.	X		
17. Liquid biohazardous waste is disinfected prior to drain disposal.	X		
18. The PI establishes policies and procedures whereby only persons who have been advised of the potential hazards and meet any specific entry requirements (e.g. immunization) enter the lab.	X		
19. A biohazard symbol is posted on the access doors. When special provisions for entry are required (e.g., immunization), the sign identifies the infectious agent(s), lists the name and telephone number of the PI or other responsible person(s), and indicates any special requirement(s) for entering. Biohazard labels are posted on equipment used to store or grow Risk Group 2 materials.	X		Biohazard sign posted at Room 211A
20. Personnel know requirement for an insect & rodent control program. [If pest control is needed, call Facilities' Work Request, x6274.]	X		
21. Lab coats, gowns, smocks, etc. are worn while working in the lab.	X	X	Lab coats in Room 255 should be hung on hooks, not on backs of chairs.
22. A laundry service is provided for non-disposable lab coats, gowns, smocks, etc.		X	No contract laundry service is provided.
23. Animals not involved in the work are not permitted in the laboratory.	X		
24. Skin contamination with infectious materials is avoided. Gloves are worn when handling experimental animals and when skin contact with the agent is unavoidable.	X		
25. Hypodermic needles are used only for parental injection and aspiration of fluids from lab animals and diaphragm bottles. Only needle-locking syringes, safety needles, or disposal syringe-needle units are used for the injection or aspiration of infectious fluids.			N/A
26. Needles are <u>not</u> bent, sheared, replaced in the needle sheath or guard, or removed from the syringe following use. Used needles and syringes are placed in a puncture-resistant "sharps" container and, when 2/3 full, placed at a medical waste drop-off location for pick up by LBNL's contracted medical waste vendor.			
27. Spills and accidents that result in overt exposures to infectious or potentially infectious materials are immediately reported to the lab PI.	X		
28. When appropriate, baseline serum samples for laboratory and other at-risk personnel are collected and stored.			N/A
29. A biosafety manual and/or exposure control plan (as applicable) is prepared or adopted. Personnel are advised of special hazards and are required to read instructions on practices and procedures.	X		LBNL Biosafety Manual and Biological Use Authorization
Containment Equipment			
30. Biosafety cabinets (Class I or II) or other appropriate personal protective or physical containment devices are used whenever: <ul style="list-style-type: none"> a. Procedures with a high potential for creating aerosols are conducted (e.g. centrifuging, grinding, blending, vigorous shaking or mixing, sonic disruption, opening pressure or vacuum sealed vessels, intranasal inoculation of animals, harvesting infected tissues, etc.) b. High concentrations or large volumes of infectious agents are used. (Such materials may be centrifuged in the open lab if sealed heads or centrifuge safety cups are used and if they are opened only in a biosafety cabinet. 	X		Location of BSCs: 3 BSCs in 211A Date of Last Certification: 6/27/06

Radiological Work Authorization (RWA) Appraisal Criteria and Results Summary Genomics Division IFA

Chris Donahue, Radiation Protection Group
6/16/06

		REVIEWED			
		Yes	No	Not	Obs/App
Administrative	Authorization approved and signed	X			
	Authorization current	X			
	All users listed on authorization	X			
	All users trained in accordance with authorization requirements	X*			
	Authorization accurately reflects work being conducted	X			
	Authorization posted / available in work area	X			
Radiation Protection					
	Radioisotope Journal up to date (RIJ)	X			(RIJ overfilled – see recommendation in Appendix D)
	Contamination/Inventory Control: meters, material storage, waste segregation, housekeeping	X			
	Exposure Control: shielding, dosimetry, PPE, food/drink	X			
	Posting & Labeling: rooms, sinks, equipment	X			(updated label during walkthrough)

*To ensure that all users are trained in accordance with authorization requirements, each radiation worker listed on a specific authorization is assigned a 'role' in RADAR based on the type of work they will be performing. Examples include "unsealed material rad worker", "accelerator operator", and "sealed source user". Based on the selected 'role' for the worker, the required training classes are linked to the user's employee ID number. RADAR is tied to the HR-Training database and the records of required radiation safety training are transferred into the RADAR database daily. To meet 10CFR835 requirements, RADAR is programmed to require a two-year renewal for the radiation worker training classes. To ensure on-going compliance, RADAR training reports list those radiation workers coming due in 3-months, 1-month and deficient. Renewals are on an annual or 18-month cycle depending on the hazard class of the authorization to ensure that the two-year retraining requirement is met. If an employee cannot attend the retraining class, the alerts from RADAR are designed to provide enough advance notice to prevent the employee from losing radiation worker status. If an employee's training does expire, the name is flagged automatically by RADAR, the authorization cannot be renewed without removing the worker from the authorized users list. The Health Physicist then notifies the PI that the worker will be removed from authorized radiation work until the training is completed.

Satellite Accumulation Area (SAA) Requirements Checklist

SAA Location _____ Responsible Individual _____

Checked by _____ Date _____

1. Have all generators of hazardous waste using this SAA completed the training session EH&S-604, Hazardous Waste Generator Training ? yes___ no___
2. Have all generators of mixed waste using this SAA completed the training session EH&S-622, Rad/Mixed Waste Generator Training ? yes___ no___ N/A ___
3. Is PUB-3092, Guidelines for Generators of Hazardous Chemical Waste at LBL readily available to all waste generators using the SAA ? yes___ no___
4. Is an SAA sign (Stores No. 4280-72514) posted indicating the area is an "SAA", including the name, bldg/room# and telephone extension of the responsible party ? yes___ no___
5. Is the SAA at or near the point of generation (same or adjacent room or work area) and under the control of the person(s) who actually generate the waste ? yes___ no___
6. Are **all** containers of hazardous waste completely and correctly labeled with a standard red and white LBL "**HAZARDOUS WASTE**" label (Stores No. 4280-72601), including:
 - a. Generator Name, Phone, Building, Room ? yes___ no___
 - b. Accurate description of the contents ? yes___ no___
 - c. SAA Start Date ? yes___ no___
 - d. Indication of hazardous properties (appropriate box checked) ? yes___ no___
 - e. Physical waste form (appropriate box checked) ? yes___ no___
7. Are all flammable wastes greater than 1 quart in volume stored in an approved safety container (red flam can) ? yes___ no___
8. Are all liquid wastes stored in secondary containment, separated by compatability ? yes___ no___
9. Are all wastes properly segregated for collection according to compatability group ? yes___ no___
10. Are all waste containers stored closed when not adding waste to them ? yes___ no___
11. Are Hazardous and Mixed waste accumulation areas physically separated ? yes___ no___ N/A___
12. Are wastes stored sufficiently separate from products or raw materials ? yes___ no___
13. Are all waste containers within 275 days (9 months) of the "SAA start date" ? yes___ no___
14. Is there less than the allowable maximum of 55 *gallons* of hazardous waste or 1 *quart* of acutely or extremely hazardous waste stored in the SAA ? yes___ no___

DESCRIPTION OF DEFICIENCY

ITEM NO. COMMENT

Checked by: _____ Date: _____

DESCRIPTION OF DEFICIENCY

LBNL Laser Operations Safety Audit Form

Rev 01 26Jun06

AHD # 2032
JGI

Administration Information

AHD # 2032 AHD Title/Operation Name DNA Sequencing
Auditor K Barrett Date 7-24-06 PI Martin Pollard Division JGI
Laser Supervisor (POC) Chris Duma Building 100 Room
Present during audit
Martin Pollard Michael Lee
Don Miller Stephen Frankaszek
Chris Duma

Documentation

AHD current (circle) (Yes) No All Lasers Listed in AHD (circle) Yes No See Note 1

Laser Information

Number of lasers 106 +
User Manuals present For All Some None
Lasers in storage
Alignment Lasers in use (Y) N Type/Quantity HeNe Diode IR
New laser(s), list with specifications on last page

Environment

	YES	NO	NA	NOTE
Main entrance Door Posted				<u>2</u>
Posting accurate				
Contact information				
Readably visible				
Ancillary doors				
Entry through curtain				
Windows and doors coverings		<input checked="" type="checkbox"/>		
Illuminated sign			<input checked="" type="checkbox"/>	
Functional				
Access control	<input checked="" type="checkbox"/>			
Administratively controlled	<input checked="" type="checkbox"/>			
Interlocked		<input checked="" type="checkbox"/>		
By pass available			<input checked="" type="checkbox"/>	
E-stop present			<input checked="" type="checkbox"/>	
Functional			<input checked="" type="checkbox"/>	

LBNL Laser Operations Safety Audit Form

Rev 01 26Jun06

AHD # 2032
JBT

Environment cont...	YES	NO	NA	NOTE
Last interlock checks date:			✓	
Interlock functioning			✓	
Written Interlock check procedure			✓	
Interlock to shutters			✓	
Interlock to power supply			✓	
Housekeeping			✓	
On optical table	✓			
In laser use area			✓	
Space at beamline			✓	

Beam Path	YES	NO	NA	NOTE
Totally open beam path		✓		
Totally enclosed beam path Tubes Perimeter Panels <u>Class 1 product</u> Fiber	✓			
Combination path, % open % enclosed			✓	
Lasers & optics secured to table	✓			
Beam properly contained	✓			
Beam blocks			✓	
Perimeter guards			✓	
Other means (describe)			✓	
Beam in line with workstations			✓	
Evidence of laser burns or cross hairs on walls			✓	
Reflections contained	✓	✓		
Beams blocked from directly exiting open door or window	✓			
Beams required to leave table		✓		
Crosses walk way (controls in place)			✓	
Describe			✓	
Passes into adjacent room			✓	
Describe means and controls			✓	

Beam Path cont...	YES	NO	NA	NOTE
Non-essential materials out of beam path	✓			
Upward directed beams		✓	✓	
Blocked			✓	

LBNL Laser Operations Safety Audit Form

Rev 01 26Jun06

AHD # 202

	YES	NO	NA	NOTE
Beam Path cont...				
V. Labeled			✓	
Collecting optics used in room	✓			
Fiber optics in use		✓		
Fiber ends labeled			✓	
Container for sharps			✓	
Fiber conduit labeled				
	YES	NO	NA	NOTE

Personnel Factors				
Laser eye exam by all laser personnel (EHS288)				
Laser safety training current (EHS280)				
Laser alignment evaluation completed (EHS287)				
Laser hazard awareness completed (EHS289)				
Has staff read AHD?				
Correct eyewear available (OD & wavelength), one pair				
Proper storage, where <u>multiple</u> ⁴ <u>on table</u>				
Sufficient quantity on hand <u>yes</u>				
Condition of eyewear (Very Good) Good Fair Damaged labeling problems			✓	
Skin protection needed, if yes available				

	YES	NO	NA	NOTE
Process Interaction				
Are gases/vapors/fumes controlled?			✓	
Electrical items				
Optical tables grounded?			✓	
Optical tables bonded?			✓	
Commercial equipment? <u>(All)</u> Some home made				
Seismic concerns			✓	
Table(s)			✓	
Work area				

Associated non beam concerns related to this work

List chemicals

Eyewear OD too high For visible alignment user states user mechanical aids

1 pair OD 2
 2-3 488-515
 7 190-380
 2nd style 7 190-532

LBNL Laser Operations Safety Audit Form

Rev 01 26Jun06

AUD # 2032
JG-1

Additional comments and notes

Note

1 Laser use is a combination of ~~cell~~ gene sequencing + class 1 laser products.

176 - Applied Biosystem 3730 units - new laser showing.

36 MegaBase 4500 units

1 - ~~Shiga~~ cell sorter - cytopsis - e-flow model

2 No exposure to operators during use.

Only exposure during service.

Some units moved to curtained off area for work.

Possible to do alignment check with unit in place, need to post & have engineered beam block.

~~Some~~ Service of AB units performed by vendor rep - I will send sign - splats. 25 Argon beam int 7.5mW beams. Presently does not post area.

On cell sorter - operator has no laser exposure during alignment. AB units are maintained by vendor, laser beam out & are replaced by comparable units - therefore specifications stay the same, but manufacturer & model can change.

AAD in need of updating in several areas, will follow up with user.

Appendix D – Findings and Observations

Appendix D

Findings and Observations

Item No.	Building & Room #	Description of Finding (#'d items) or Observations (lettered items)	Regulation or Policy Citation	Recommendation or Corrective Action	Entered CATS? Y/N
1	84-211, 211A, 255	Biosafety, Lab Coat Laundry Finding: Lab coats are worn in Rooms 211, 211A, and 255. Room 211A is Biosafety Level 2 (BL2) containment and disposable lab coats are often worn in this room. Cloth lab coats are worn in room 255. There is no lab coat laundry service.	LBNL Biosafety Manual (Containment Level 2) and PUB-3000 (Chapter 4, Section 4.7). LBNL requirements are based on NIH and CDC BL2 criteria. Requirement: All protective clothing is either disposed of in the laboratory or laundered by the institution; it should never be taken home by personnel.	Corrective action: Establish a lab coat laundry service through LBNL procurement and ensure all personnel launder their coats. Use and disposal of disposable lab coats in the BL2 tissue culture room is also an option.	
A	84-211A	Biosafety, Chair Cushion Observation: The BL2 tissue culture room has chairs with cloth-covered seat cushions that cannot be disinfected.	LBNL Biosafety Manual (Containment Level 2) and PUB-3000 (Chapter 4, Section 4.7) require BL2 labs to be designed so that they can be easily cleaned, but there is not an explicit requirement for cleanable seat cushions in BL2 containment. NIH/CDC Biosafety in Microbiological and Biomedical Laboratories (BMBL) states that chairs and other furniture used in laboratory work should be covered with a non-fabric material that can be easily decontaminated.	Recommendation: Chairs in 211A should be replaced with chairs that have cleanable vinyl cushions.	
B	84-211A	Biosafety Cabinets & Burner Fires Observation: Bunsen burners are in use in all three biosafety cabinets (BSCs) in Room 211A. Two BSCs have Touch-O-Matic burners. One BSC (Forma S/N 164471743) has a standard bunsen burner that may present a fire hazard.	Publicly available literature from BSC manufacturers (e.g., Baker), safety organizations (e.g., AIHA), DOE (i.e., Lessons Learned), and campuses document and state: a) there are fires in BSCs due to bunsen burners, b) flames in BSCs are not recommended, c) flames are not needed when good BSC and aseptic techniques are used, and d) flames should only be used after evaluation of the circumstances and only burners with pilot lights should be used.	Recommendation: Researchers should seriously evaluate sterility practices and needs and determine if sterilization by flame is required. If needed, all standard bunsen burners should be replaced with burners with pilot lights (e.g., Touch-O-Matic Bunsen Burner) or electric incinerators (e.g., Bacti-Cinerator).	
C	84-255	Biosafety, Lab Coat Hooks Observation: When not in use, some the cloth lab coats in Room 255 are placed on the backs of lab and desk chairs. Room 255 is BL1 containment.	LBNL Biosafety Manual (Containment Level 1) and PUB-3000 (Chapter 4, Section 4.7). LBNL requirements are based on NIH and CDC BL1 criteria. These standards state that lab coats should be worn in BL1 containment, but the method for storing lab coats is not specified.	Recommendation: Provide separate hooks on which to hang lab coats so that potential biological materials on the lab coat do not contact items that should not be contaminated (e.g., seat cushions, personal clothes, other lab coats).	

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16	84-211	Biosafety, Eyewash Testing & Signage finding: The tag on the emergency eyewash in 84-211 indicated that the eyewash was not being tested quarterly and there was no eyewash sign posted.	LBNL Chemical Hygiene and Safety Plan (PUB-5341) in section: Hazard Controls, Emergency Procedures and Equipment, Emergency Eyewashes and Safety Showers. Emergency eyewash units must be posted with a highly visible sign and be flushed at least quarterly by Facilities as documented on an inspection tag. Also, LBNL Biosafety Manual (Containment Level 2) requires an eyewash.	Corrective action: Request that Facilities test the eyewash quarterly and post a standard eyewash sign product at the eyewash. Requests may be made via the Facilities Work Request Center.	
D	84 Biggin, Cheng, Rubin	Radiological Work Authorization (RWA) Observation related to RWA 1035-Cheng, 1036-Rubin, and 1128-Biggin The Radioisotope Journals (RIJs) were reviewed for each project and all required records were on file. However, it was noted that the RIJs were overflowing with older records. The projects have been reminded that only records generated in the past three years must be maintained in the RIJ.	10 CFR 835.704 (a) requires records to be maintained for 3 years	Recommendation: Radiation workers discard or remove to a different binder RIJ records that are more than three years old. The older records should either be discarded or removed to another binder. Note: The RPG technician assigned to these RWAs has already provided new RIJs and assisted in the transfer of older records to maintenance and audit reviews in the future.	
2	100-142, 400-418	Autoclave Biological Indicator Finding: The autoclave logs did not have current records that biological indicators had been used to test the autoclave's efficiency (i.e., sterilization). The autoclave operators indicated that biological indicators had been used, but their use was not recorded.	LBNL Biosafety Manual (Sterilization) and PUB-3000 (Chapter 4, Section 4.7) require autoclaves to be certified for operating efficiency by the periodic use of biological indicator controls and records maintained for three years.	Corrective action: Add biological indicator test dates times, and test result information to the JGI autoclave logs.	
E	100-142, 400-418	Autoclave Log Information Observation: Records of each autoclave run are maintained by Fisher-Scientific in the form of autoclave printed tapes and manual logs. Printed tapes are stored, but the information on the tapes is not routinely reviewed. The information on the manual log is limited and may not provide a complete verification the autoclave's sterilization efficiency.	This recommendation is a best management practice. The LBNL Biosafety Manual (Sterilization) and PUB-3000 (Chapter 4, Section 4.7) contain requirements for autoclaves, but do not specifically cover this recommendation.	Recommendation: Benchmark with other institutions on recording and maintaining autoclave-run information. Review what information is recorded, how often the information is recorded, and in what manner the information is maintained (e.g., paper tapes or manual logs). Modify JGI records maintenance requirements based on this benchmarking.	

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F	100-142, 400-418	Autoclave Records Retention Observation: Autoclave logs and tapes are being maintained indefinitely (e.g., up to 1998).	LBNL Biosafety Manual (Sterilization) and PUB-3000 (Chapter 4, Section 4.7) require autoclaves to be certified for operating efficiency by the periodic use of biological indicator controls and records maintained for three years. There is no requirement to maintain records beyond three years.	Recommendation: Include a retention-time policy in the autoclave SOP(s) stating that autoclave logs and record tapes that are more than three years old should be disposed.	
G	100-142, 400-418	Autoclave SOP Approval Record Observation: The Fisher-Scientific autoclave SOPs have a "version date," but the SOP does not indicate who reviewed and approved the SOP and when.	This recommendation is a best management practice. The LBNL Biosafety Manual (Sterilization) and PUB-3000 (Chapter 4, Section 4.7) contain requirements for autoclaves, but do not specifically cover this recommendation.	Recommendation: Ensure autoclave SOPs include a record of who reviewed and approved the SOP and when.	
H	100-142, 400-418	Autoclave, Approved Log Observation: Copies of the autoclave log used by JGI are not included in the autoclave SOP(s).	This recommendation is a best management practice. The LBNL Biosafety Manual (Sterilization) and PUB-3000 (Chapter 4, Section 4.7) contain requirements for autoclaves, but do not specifically cover this recommendation.	Recommendation: Include a copy of the autoclave log to be used in the SOP(s) so that the log is approved as part of the SOP(s).	
I	100-142, 400-418	Autoclave SOP, Emergency Procedures Observation: Emergency procedures (e.g., steam burns, medical treatment) are not covered in the autoclave SOPs.	This recommendation is a best management practice. The LBNL Biosafety Manual (Sterilization) and PUB-3000 (Chapter 4, Section 4.7) contain requirements for autoclaves, but do not specifically cover this recommendation.	Recommendation: Include emergency procedures in the autoclave SOP(s).	
J	100-142, 400-418	Autoclave Bag Labeling Observation: Bags of waste are sometimes brought to the autoclave room that are not labeled as to their source.	This recommendation is a best management practice. The LBNL and JGI biological waste policies do not have requirements for labeling waste bags as to their source.	Recommendation: Include in the SOPs and JGI autoclave training requirements for labeling the autoclave bags.	
3	400-418	Autoclave Room Fire Door , Finding: The fire door between Room 418 and the corridor is kept blocked open. Autoclave users report that keeping the door open reduces heat and odors and is more convenient.	2001 California Building Code, Section 713-Fire Resistive Assemblies for Protection of Openings	Corrective Action: Keep the fire door closed or install an approved self-closing device that is activated in case of a fire or smoke event.	

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K	400-418	Autoclave Room Supply Air Observation: When the door to Room 418 is closed, the canopy hoods in the room appear to create a strong draw of air under the door. This observation indicates that there is not enough supply air being delivered to Room 418 and is consistent with the autoclave operator's observations that heat and odors in the room are stronger when the door is closed.	No regulation or policy citation. This recommendation involves good ventilation design and creation of a more comfortable working environment.	Recommendation: Request an evaluation of the room supply and exhaust rates. If needed and possible, increase the supply air flow to the room so that the room is only slightly negative in pressure relative to the corridor. An alternative might be to install an approved self-closing device on the room's fire door that keeps the door open and is activated in case of a fire or smoke event.	
L	400-418	Autoclave Room Odors & Canopy Hoods , Observation: The autoclave operator reported that there is heat and odors in the room, especially when the door to the corridor is closed. The canopy hoods over the autoclave doors do not appear to project out far enough over the autoclave door to capture most-all of the rising steam/heat when the autoclave door is opened.	No regulation or policy citation. This recommendation involves proper canopy-hood design and creation of a more comfortable working environment.	Recommendation: Fabricate and add sheet metal extensions to each canopy hood so as to capture more of the heat/steam rising from the autoclave door area. These extensions might be an actual expansion of the canopy hood face or a metal baffel to direct more rising air to the canopy hood face	
M	400-446	Ultracentrifuge Service Contract Observations: a) The centrifuge is reportedly used about once per year, b) there is a rotor log book with the last entry about one year ago, and c) there is no service contractor because use is infrequent. The centrifuge's very limited use might practically prevent reaching the useful service life of the rotor.	General centrifuge manufacturer requirements to ensure safety of rotors and to preclude catastrophic failures.	Recommend ultracentrifuge owner get a centrifuge service contractor and have the centrifuge checked once per year.	
4	Bldg. 100 & 400	Hazardous Materials Business Plan & Chemical Inventory Finding: JGI chemical users are not widely taking routine responsibility for keeping the chemical inventory for their area updated as chemicals are added and disposed, although this concern does not appear to have significantly impacted the larger-quantity chemical uses that require reporting in the Plan.	LBNL Chemical Hygiene and Safety Plan (Chemical Inventory) and PUB-3000 (Chapter 4, Section 4.8). It is the line manager's responsibility to ensure all chemicals are entered into and removed from the Chemical Management System (CMS) within 30 days of receipt and disposal, respectively.	Recommendation: Chemical user supervisors need to ensure their chemical inventories are updated as chemicals are added and disposed. JGI should update and implement systems and line management delegation to ensure CMS updates by chemical users.	

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N	Bldg. 100 & 400	Slug Plan Best Management Practices (BMPs) Observation: BMPs written for the CCCSD permit include inspection of some items that do not focus on protecting sanitary sewer drains from the discharge of prohibited or restricted materials. For example, the CCCSD BMPs require inspections of autoclaves, trauma kits, and safety showers. These inspections do not prevent prohibited materials from being discharged.	Central Contra Costa Class III Industrial User (Sanitary Sewer) Permit, Appendix B.1 and B.2	Recommendation: Remove BMP inspections (e.g. autoclave, trauma kit, lab hoods, etc.) that do not specifically help in preventing unauthorized discharges to the sanitary sewer. This should be done at the next permit renewal in December 2008. As written, JGI could receive a violation if these other inspections were missed since they are now a CCCSD permit requirement.	
O	Bldg. 100 & 400	Environmental & Hazardous Materials Permits Observation: JGI Operations, Facilities, and/or ES&H staff were not fully aware of or able to readily access some of the JGI regulatory environmental and hazardous materials permits. Changes in personnel in these positions may have contributed to this condition. Copies of most of the permits are maintained on the LBNL Environmental Services webpage.	Permit requirements must be maintained.	Recommendation: JGI should develop a more comprehensive plan and system for maintaining and checking documentation of permits, inspections, and logs	
5	Bldg. 400	Above Ground Petroleum Storage Tank Finding: Quarterly inspections for the 4,000 gallon aboveground storage tank are not maintained.	JGI Spill Prevention, Control and Countermeasure Plan (SPCC), section 6.2 and Appendix B (Tank Inspection Form); 40 CFR 112.7(e)	Corrective Action: Implement quarterly inspections through Peterson Power Company using form in SPCC Plan Appendix B.	
6	Bldg. 400	Above Ground Petroleum Storage Tank Finding: The new JGI Safety Coordinator and JGI Facilities Manager do not have spill prevention training.	JGI SPCC Plan, section 8.2, 40 112.7(f)(3)	Corrective Action: Provide SPCC training, Course EHS-680 to JGI staff.	
7	Bldg. 400	BAAQMD Engine Generator Log Finding: The two engine generators at JGI do not have an engine generator operating log that meets the requirements of the BAAQMD. The inspection reports provided by Peterson Power Systems do not meet the BAAQMD requirements.	Bay Area Air Quality Management District (BAAQMD) Permit to Operate Plant #14549	Corrective Action: Maintain a monthly log that documents hours of total operation, hours operated in an emergency, and for each emergency the condition of the emergency, and hours operated as a reliability related activity.	

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P	JGI	Fire Safety Permit Observation: Fire Safety Permit For Hot Work or Hazardous Operation forms are prepared by Greg Stanley and faxed to the Fire Marshal, Gary Piermattei. G. Stanley may act as the Permit Authorizing Individual. He is to fax the Fire Marshal all permits. G. Stanley's understanding and performance related to these permits is good. Additional training is recommended only to supplement G. Stanley's training related to this function.	Publication 3000, Section 12.11 Permits	G. Stanley should complete EHS 535 Hot Work Permit Training. NOTE: G. Stanley completed EHS 535 on 8/8/06.	
8	100-121	Laser AHD finding: Controls for service of Class 3b lasers (Class 1 laser products) for both MegaBACE and Applied Biosystem (ABI) systems are included in the AHD. MegaBACE units are currently serviced by one JGI staff person according to the AHD, but ABI units are serviced by an outside vendor. This vendor work is not covered by the AHD and the vendor does not follow the controls listed in the AHD.	Scope of Activity Hazard Document (AHD) #2032. Also PUB-3000, Chapter 16 - Lasers, Section 16.8.4 - AHDs.	Corrective Action: Change and approve the AHD to include the vendor's laser work and safety controls performed on the ABIs.	
9	100-139M	SAA: Results discussed with participants		Recommendations discussed with participants	
10	400-413	SAA: Results discussed with participants		Recommendations discussed with participants	
11	400-446	SAA: Results discussed with participants		Recommendations discussed with participants	
12	400-458	SAA: Results discussed with participants		Recommendations discussed with participants	
13	84-220	SAA: Results discussed with participants		Recommendations discussed with participants	
14	Genomics Division	Genomics ISM Plan Finding: The scope of work that is authorized in the Genomics Division ISM Plan is fairly generic and does not cover or reference the range of hazardous work, authorizations, and permits covered in this IFA or provide sufficient detail for management to know what work is authorized or permitted and the form of the authorization or permit.	PUB-3000 (Chapter 6, Safe Work Authorizations) and PUB-3140 (Integrated Environment, Health & Safety Management Plan – Integrated Safety Management System).	The ISM Plan must cover and summarize Genomics Line Management Authorizations, Formal Authorizations, and Facility-Based Authorizations at JGI and Building 84. The ISM Plan must also cover or reference the Division's processes for managing and documenting authorizations and permits.	

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15	Genomics Division, 84	Bldg. 84 Authorization & Tracking Finding: The HEAR system is not being used by Genomics to identify and track hazards, equipment, or authorizations at Building 84. A separate Life Sciences system may be in use. No system is specified in the Division ISM Plan.	PUB-3000 (Chapter 6, Safe Work Authorizations) and PUB-3140 (Integrated Environment, Health & Safety Management Plan – Integrated Safety Management System).	Corrective Action: Genomics needs to specify the authorization and tracking system for Building 84 work (e.g., in the Division ISM Plan). The HEAR system may be used for Building 84 work.	